

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Current Amended) In a computer system that accesses a database having one or more data tables, the computer system configured to provide content from the database to a Web server for inclusion in Web based responses to requests for Web based content, the computer system including a cache configured to cache database content included in Web based responses so as to provide more efficient access to the cached database content when formulating subsequent Web based responses, a method for formulating a Web based response in response to receiving a Web based request for database content, the method comprising the following:

an act of selecting a data table that is to be monitored for content changes, the selected data table selected from among the one or more data tables of the database;

an act of inserting a record for the selected data table into a separate change notification table, the record including versioning information identifying and corresponding to the selected data table, the versioning information retrievable by the Web server to determine when a corresponding cache entry containing cacheable content from the selected data table is invalid;

an act of assigning a trigger to the selected data table, the trigger configured to update the versioning information ~~for the selected table included in the~~ in the change notification table when content in the selected data table is altered;

an act of caching interim results that can be used in the generation of a plurality of different Web responses in a cache entry in the cache, that includes the interim results based on a portion of content one or more records from the selected data table and one or more records from one or more other data tables in the cache, the cache entry including the versioning information identifying and corresponding to the selected data table;

an act receiving a Web based request for a Web based response that is to include the interim results ~~the portion of content~~ subsequent to caching the interim results in the cache entry;

an act of querying the change notification table for versioning information identifying and corresponding to the selected data table;

an act of receiving current versioning information identifying and corresponding to the selected data table;

an act of comparing the cached versioning information to the current versioning information;

an act of determining how to access the interim results ~~the location to retrieve the portion of content from~~ for inclusion in a Web based response based on the results of comparing the versioning information and in response to receiving the Web based request for the portion of content;

an act of accessing the interim results in accordance with the determination ~~retrieving the portion of content from the determined location~~; and

an act of including the retrieved portion of content in a constructing a Web based response responsive to the Web based request based on the interim results.

2. (Previously Presented) The method as recited in claim 1, wherein the act of selecting a data table that is to be monitored for content changes comprises an act of receiving user-input that causes the computer system to select a data table is to be monitored for content changes.

3. (Original) The method as recited in claim 1, wherein the act of selecting a data table that is to be monitored for content changes comprises an act of the computer system automatically selecting a data table in response to a received Web request.

4. (Previously Presented) The method as recited in claim 1, wherein the act of inserting a record for the selected data table into a change notification table compromises an act of inserting the record in response to user-input.

5. (Previously Presented) The method as recited in claim 1, wherein the act of inserting a record for the selected data table into a change notification table compromises an act of the computer system automatically inserting the record in response to a Web request.

6. (Previously Presented) The method as recited in claim 1, wherein the act of inserting a record for the selected data table into a change notification table comprises an act of inserting the record into a SQL table.

7. (Original) The method as recited in claim 1, wherein the act of assigning a trigger to the selected data table comprises an act of receiving user input instructing a trigger to be assigned to the selected data table.

8. (Previously Presented) The method as recited in claim 1, wherein the act of assigning a trigger to the selected data table comprises an act of the computer system automatically assigning a trigger in response to receiving a Web request for content contained in the selected data table.

9. (Previously Presented) The method as recited in claim 1, wherein the act of assigning a trigger to the selected data table comprises an act of the assigning a trigger that, when executed by a processing unit at the computer system in response to content in the selected data table being altered, will update a corresponding change ID in the table change notification table.

Claim 10. (Cancelled).

11. (Previously Presented) The method as recited in claim 1, wherein the act of receiving current versioning information identifying and corresponding to the selected data table comprises an act of receiving updated versioning information that indicates the cache entry is to be invalidated.

Claims 12-35. (Cancelled).

36. (Currently Amended) A computer program product executed at a computer system that access a database having one or more data tables, the computer system configured to provide content from the database to a Web server for inclusion in Web based responses to requests for Web based content, the computer system including a cache configured to cache database content included in Web based responses so as to provide more efficient access to the cached database content when formulating subsequent Web based responses, the computer program product implementing a method for formulating a Web based response in response to receiving a Web based request for database content-d, the computer program product comprising one or more computer-readable storage media having stored thereon computer executable instructions that, when executed by a processing unit, implement the method including the following:

select a data table that is to be monitored for data changes, the selected data table selected from among the one or more data tables of the database;

insert a record for the selected data table into a change notification table, the record including versioning information identifying and corresponding to the selected data table, the versioning information retrievable by the Web server to determine when a corresponding cache entry containing cacheable content from the selected data table is invalid;

assign a trigger to the selected data table, the trigger configured to update the versioning information for the selected table in the record in the change notification table when data in the selected data table is altered;

cache a interim results that can be used in the generation of a plurality of different Web responses in a cache entry in the cache, that includes the interim results based a portion of content-one or more records from the selected data table and one or more records from one or more other tables in the cache, the cache entry including the versioning information identifying and corresponding to the selected data table;

receive a Web based request for a Web based response that is to include the interim results the portion of content subsequent to caching the interim results in the cache entry;

query the change notification table for versioning information identifying and corresponding to the selected data table;

receive current versioning information identifying and corresponding to the selected data table.

compare the cached versioning information to the current versioning information;

~~determine how to access the interim results the location to retrieve the portion of content from~~ for inclusion in a Web based response based on the results of comparing the versioning information in response to receiving the Web based request for the portion of content;

accessing the interim results in accordance with the determination retrieve the portion of content from the determined location; and

~~include the retrieved portion of content in a~~ construct a Web based response responsive to the Web based request based on the interim results.

37. (Previously Presented) The computer program product as recited in claim 36, wherein the one or more computer-readable storage media are physical media.

38. (Previously Presented) The computer program product as recited in claim 36, wherein the one or more computer-readable storage media include system memory.

Claims 39-49. (Cancelled).

50. (Currently Amended) The method as recited in claim 1, wherein the act of determining how to access the interim results the location to retrieve the portion of content from for inclusion in a Web based response comprises an act of determining that the portion of content is interim results are to be retrieved-reconstructed from the one or more records in the selected data table and the one or more records in the one or more other data tables.

51. (Currently Amended) The method as recited in claim 50, further comprising:

an act of invalidating the cache entry that includes ~~the portion of content the~~ interim results based on the comparison of version information in response to receiving the Web based request for the portion of content.

52. (Currently Amended) The method as recited in claim 1, wherein the act of ~~determining how to access the interim results the location to retrieve the portion of content from for inclusion in a Web-based response~~ comprises an act of determining that the interim results are portion of content is to be retrieved from the cache entry.

53. (Currently Amended) The method as recited in claim 1, wherein the act of ~~accessing the interim results in accordance with the determination retrieving the portion of content from the determined location~~ comprises an act of reconstructing the interim results from one or more records in the selected data table and the one or more records in the one or more other data tables retrieving the portion of content from the database table not withstanding that the ~~portion of content was~~ interim results were cached at the computer system when the Web based request ~~for the portion of content~~ was received.

54. (Currently Amended) The method as recited in claim 53, wherein the act of ~~including the retrieved portion of content in~~ constructing a Web based response responsive to the Web based request based on the interim results comprises including the reconstructed interim results ~~retrieved portion of content from the database table~~ in the Web based response not withstanding that the interim results were ~~portion of content was~~ cached at the computer system when the Web based request ~~for the portion of content~~ was received.

55. (Currently Amended) The computer program product as recited in claim 36, wherein computer executable instructions that, when executed, cause the computer system to determine how to access the interim results ~~the location to retrieve the portion of content from for inclusion in a Web-based response~~ comprise computer executable instructions that, when executed, cause the computer system to determine that the interim results are portion of content is to be reconstructed ~~retrieved from the one or more records in the selected data table and the one or more records in the one or more other data tables.~~

56. (Currently Amended) The computer program product as recited in claim 55, further comprising:

computer executable instructions that, when executed, cause the computer system to invalidate the cache entry that includes the ~~portion of content~~ interim results based on the comparison of version information in response to receiving the Web based request for the portion of content.

57. (Currently Amended) The computer program product as recited in claim 36, wherein computer executable instructions that, when executed, cause the computer system to determine how to access the interim results ~~the location to retrieve the portion of content from for inclusion in a Web based response~~ comprise computer executable instructions that, when executed, cause the computer system to an act of determine that the interim results ~~portion of content is~~ to be retrieved from the cache entry.

58. (Currently Amended) The computer program product as recited in claim 36, wherein computer executable instructions that, when executed, cause the computer system to access the interim results in accordance with the determination ~~retrieve the portion of content from the determined location~~ comprise computer executable instructions that, when executed, cause the computer system to reconstruct the interim results from one or more records in the selected ~~retrieve the portion of content from the~~ database table not withstanding that the portion of content interim results were ~~was~~ cached at the computer system when the Web based request for the portion of content was received.

59. (Currently Amended) The computer program product as recited in claim 58, wherein computer executable instructions that, when executed, cause the computer system to construct include the retrieved portion of content in a Web based response responsive based on the interim results ~~to the Web based request~~ comprise computer executable instructions that, when executed, cause the computer system to include the ~~retrieved portion of content from the database table~~ reconstructed interim results in the Web based response not withstanding that the interim results were ~~portion of content was~~ cached at the computer system when the Web based request for the portion of content was received.

60. (New) In a computer system that accesses a database having one or more data tables, the computer system configured to provide content from the database to a Web server for inclusion in Web based responses to requests for Web based content, the computer system including a cache configured to cache database content included in Web based responses so as to provide more efficient access to the cached database content when formulating subsequent Web based responses, a method for formulating a Web based response in response to receiving a Web based request for database content, the method comprising the following:

- an act of selecting a data table that is to be monitored for content changes, the selected data table selected from among the one or more data tables of the database;

- an act of inserting a record for the selected data table into a separate change notification table, the record including versioning information identifying and corresponding to the selected data table, the versioning information retrievable by the Web server to determine when a corresponding cache entry containing cacheable content from the selected data table is invalid;

- an act of attaching a trigger to the selected data table, the trigger configured to update the versioning information for the selected table in the change notification table when any record in the selected data table is altered regardless of the mechanism used to alter the record;

- an act of constructing interim results from a collection of records, including a plurality of records in the selected data table and one or more records from one or more other data tables, the interim results usable in the generation of a plurality of different Web responses;

- an act of caching the interim results in a cache entry in the cache, the cache entry including the versioning information identifying and corresponding to the selected data table;

- an act of a cache interface module issuing a blocking query to the change notification table for versioning information identifying and corresponding to the selected data table, the blocking query blocking on the change notification table until versioning information for the selected table is updated;

an act of detecting a change to a record in the selected data table, subsequent to issuing the blocking query;

an act of the assigned trigger updating the versioning information for the selected table in the change notification table, subsequent to issuing the blocking query;

an act of the cache interface module receiving the updated versioning information in response to the blocking query;

an act of comparing the cached versioning information to the updated versioning information; and

an act of invalidating the cache entry for the interim results based on the results of the comparison.